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# Biases in the decoding of others' facial expressions.

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# BIASES IN THE DECODING OF OTHERS' FACIAL EXPRESSIONS

A Thesis Presented

By

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ABSTRACT

BIASES IN THE DECODING OF OTHERS' FACIAL EXPRESSIONS

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The transfer of emotional states may occur through an emotion contagion process, in which a person mimics the emotional expression of another, or a cognitive appraisal process, in which emotion-congruent memory nodes become activated. Either of these processes could produce bias in subsequent emotional judgments. Two experiments were conducted to determine the effect of emotion induction on subsequent nonverbal decoding ability. Subjects viewed an emotion-specific film segment and were then asked to decode a series of twenty facial expressions of emotion. Results offer some support of a cognitive bias; subjects induced to feel a specific emotion are less likely to misattribute that emotion to a discrepant facial expression. This effect was statistically significant in two of four conditions and marginally significant in a third. Results provide a basis for future research, although they were not as strong as were expected.

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# CHAPTER 1

# INTRODUCTION

Associative network theories of memory (Bower, 1981; Clark & Isen, 1982) assume that emotions, like other information, is stored in memory in informational "nodes" connected to each other by associative pathways created by past experience. When an emotion is "activated", it becomes more accessible for use in future evaluations.

In an activated state, cognitions, memories, attention, and learning are affected, as constructs congruent with a primed emotion are more easily available for use and receive more attention (Sherman, Mackie, & Driscoll, 1990). For example, children who viewed videotaped television segments designed to prime a certain trait evaluated a stranger as being higher on that trait than children who had not initially watched the video segments (Reeves & Garramone, 1983).

Consistent with this theory, research shows that activating a specific emotion leads to mood-congruent biases in attention (Forgas & Bower, 1987), encoding and learning (Bower, Gilligan, & Monteiro, 1981), retrieval (Bower & Cohen, 1982; Rholes, Riskind, & Lane, 1987), and person perception (Forgas & Bower, 1987).

The induction of an emotion leads to biases in both retrieval of past events from memory (Bower, Monteiro, & Gilligan, 1978; Bower, 1981; Forgas,

Bower, & Krantz, 1984), as well as present judgments of people and events. For example, subjects in one study interviewed after watching an emotional film were given opinion surveys dealing with political judgments, quality of life, future expectations, and responsibility. Those subjects exposed to a happy movie expressed more positive and optimistic views on all scales than did control subjects, while exposure to a sad movie produced the opposite effect (Forgas & Moylan, 1987).

Schiffenbauer (1974) asked subjects to listen to audiotapes containing either no sound, white noise, or mood-evoking conversation, and afterward had them rate still photographs of faces for their emotional content. Results showed that subjects hearing the positive tape labelled more faces as happy than did control subjects, while subjects who heard the negative tape made more ratings of sadness than did controls. In similar studies, subjects made to feel fear perceived a target person as more fearful and anxious when compared to nonaroused control subjects (Feshbach & Singer, 1957), and subjects primed for an emotion remembered more emotion-consistent details about a target person than did control subjects (Forgas & Bower, 1987).

Similar findings have been documented within communication research on the effects of television and other mass media. Relatively short exposures to mass-media presentations are able to produce changes in aggression-related cognitions (Bandura, 1969, 1973), attributions (Stein & Friedrich, 1975; Slaby & Quarfoth, 1980), attitudes (Malamuth & Check, 1981), and emotions and

emotional arousal (Thomas, Horton, Lippincott, & Drabman 1977; Linz, Donnerstein, & Penrod, 1984). Research has shown that mass-media stimuli are more extreme in their depiction of events than comparable real-life stimuli (Donovan, Feldman, & Houle, 1990), producing a strong contagion effect. Though several recent studies have called into question the size and generalizability of these effects (Freedman, 1984; Friedrich-Cofer & Huston, 1986; Freedman, 1986), it seems likely that emotions portrayed in the mass media may have an effect on subsequent emotional behavior.

While emotional arousal should affect almost any subsequent judgment, this set of studies specifically examines the effect of emotion induction on encoding and decoding of nonverbal facial expressions of emotion. Facial expressions of emotion play an important role in everyday social interactions, and are also used as signals for attachment-relevant interaction (Ainsworth, 1973; Bowlby, 1969). Nonverbal facial expressions have been found to be the most salient as well as one of the most accurate indicators of overall emotion (Argyle, Alkema, & Gilmour, 1971; Burns & Beier, 1973; Zaidel & Mehrabian, 1969).

The universality of facial expressions is well documented (Ekman, Friesen, & Ellsworth, 1972; Redican, 1982), and facial expressions have been shown to reliably differentiate distinct emotions (Ekman, Friesen, & Ancoli, 1980; Sumitsuji, Matsumoto, Tanaka, Kashiwagi, & Kaneko, 1967, as cited in Fridlund, Ekman, & Oster, 1987). Given the obvious importance of facial expressions,

biases which could be introduced by an outside source would have important implications for many basic interpersonal interactions.

In the following experiments, emotional arousal is manipulated via presentation of one of several emotion-evoking segments of videotape. Encoding is assessed by measuring subjects' facial expressions in response to an emotion-neutral videotape segment. Decoding is assessed by asking subjects to interpret the emotional expression of 20 faces shown on videotape.

Since the increased accessibility of an activated emotion facilitates processing of that emotion, it is expected that inducing a specific emotion will affect subsequent emotional judgments and ability. This hypothesis is tested in the present series of studies.

It is hypothesized that subjects should be significantly more accurate in correctly identifying a facial expression of emotion if that emotion has been previously activated. In addition, if subjects are presented with a facial expression of emotion different from the emotion that has been activated, subjects should make significantly less misattributions of the activated category to the discrepant emotional expression. For example, if sadness is activated, a subject seeing a facial expression of fear should be significantly less likely to misidentify this expression as sadness.

In addition, the intensity of arousal should affect the strength of subjects' responses to subsequent encoding and decoding segments. Subjects who initially view a strong emotional stimulus will show a greater accuracy in

encoding and decoding that emotion than will subjects initially viewing a weak emotional stimulus. Taken together, these hypotheses predict a strength of stimulus (strong/weak) x emotion type (target emotion/nontarget emotion) interaction.

# CHAPTER 2

# EXPERIMENT 1

## Method

### Subjects

Fifty-seven subjects were recruited from several undergraduate psychology courses. All subjects received experimental credit for their participation. Subjects were told that the experiment concerned the ability of amateur and professional actors and directors to accurately convey emotions to an audience.

### Setting

Subjects were seated at a small desk approximately three feet in front of a television set and VCR. An assortment of electronic equipment was stacked to the subject's right. Subjects were told that this equipment "just happened to be stored there" and would not be used in the study. A video camera positioned to film the subject's head and shoulder area was placed within a hollow stereo speaker which was part of the stored equipment. This camera was turned on before subjects entered and recorded subjects throughout the experiment. Experimenters, while in the room, sat behind subjects.

### Stimulus Materials

Subjects viewed one of four short, five-minute videotapes which showed either a strong or weak level of nonverbal emotional display. In all other

respects, including action, performer, scenario, and verbal behavior, the vignettes were identical. Subjects were told the films were short vignettes written and directed by University of Massachusetts theater majors. A female University of Massachusetts theater major performed in each vignette.

Films designed to elicit disgust showed the student at a desk calling her father on the phone. During the conversation, the student takes out a container of Chinese food to eat. In the weak disgust condition, the student is seen grimacing disapprovingly while stirring the food. In the strong disgust condition, the student finds the food has spoiled and contains maggots (see Appendix A for transcripts).

Clips used to prime sadness also showed the student at a desk calling her father. In these scenes, after several minutes of conversation, the student learns of an unexpected illness. In the weak sadness condition, the subject of this illness is an uncle's pet dog, while the student's mother is the sick person in the strong sadness condition (see Appendix B for transcripts).

Procedure

Upon entering the lab, subjects were told they would be viewing a series of film clips, some of which were made by University of Massachusetts theater majors, and some of which were made by professional film makers. After answering subjects' questions about the study, subjects were shown one of the four vignettes. Subjects were instructed to "attentively view the clip because

they would be asked to make ratings of it later." The experimenter left the room after starting the tape.

After viewing the vignette, subjects rated the film on such features as its quality, clarity and presentation. Three manipulation check questions were included in these measures. Subjects chose which emotion the vignette elicited from a choice of five alternatives (happiness, sadness, anger, fear/surprise, and disgust). Subjects also rated the strength of their emotional response on a seven-point Likert scale, with one being "not at all intense" and seven being "very intense." Finally, subjects indicated the emotion they thought the woman in the clip was feeling (see Appendix C).

Next, subjects engaged in emotion encoding and decoding tasks. The order of these tasks was counterbalanced. In the decoding task, subjects viewed a series of 20 short film segments, each of which showed the head and shoulders of a person exhibiting a particular facial expression of emotion. All clips had been tested in previous research (Beck & Feldman, 1990; Donovan, Feldman, & Houle, 1990) and were shown to reliably display a specific emotion. The segments were equally divided among five emotions (happiness, sadness, fear, anger, and disgust).

Several seconds of blank tape followed each segment. During this time, subjects chose from a list of five emotions (happy, sad, fear, anger, disgust) which emotion the person in the clip was showing. Subjects also rated the intensity of that person's emotional expression on a seven-point Likert scale.

In the emotion encoding task, subjects viewed a short emotion-neutral segment taken from a documentary about the building of the city of Canberra, Australia. After viewing this clip, subjects chose from the list of five emotions which emotion the clip made them feel and also rated the strength of that feeling. The hidden video camera recorded subjects' facial responses to this film.

Prior to dismissal, subjects were probed for suspicion, debriefed, and awarded credit.

## Results

Prior to analysis, data from 14 subjects were excluded when, during debriefing, they indicated knowledge of the presence of the video camera. A total of 43 subjects were left for analysis.

### Manipulation check

Subjects' choice of the emotion induced by the vignette was compared to the emotion they indicated the woman in the film was expressing. These measures were expected to correspond highly to one another.

When watching a disgust-evoking vignette, 87.5% of subjects correctly identified the emotion being expressed as disgust. In contrast, only 12.5% of subjects exposed to a sad vignette correctly identified the emotion as sadness. Only 25% of subjects viewing the weak sadness vignette successfully identified the emotion as sadness, while no subject correctly identified the strong sadness vignette as sadness. Most subjects in both sadness condition labeled

the emotion as fear. Overall, 75% of subjects in both sadness conditions believed fear was being expressed.

Next, subjects' ratings of vignette intensity were analyzed according to the vignettes' expected intensity and emotion. Results of a two way analysis of variance showed only the expected main effect of intensity ($F$ (1,40) = 10.58, $p$ = .002). Across both sadness and disgust primes, low intensity clips were seen as significantly less intense ($M$ = 4.43) than their high-intensity counterparts ($M$ = 5.71). Means for low sadness, low disgust, high sadness, and high disgust conditions were 4.17, 4.73, 5.16, and 5.82 respectively.

Encoding Results

To analyze encoding ability, ten second segments were extracted from an identical section of the covert videotapes made while each subject viewed the Canberra documentary. The order of these segments was randomized, and they were transferred to a master videotape. This tape was shown to a group of twenty raters who viewed each segment, chose the emotion they thought the person in the segment was expressing, and rated the intensity of the expression. Raters' modal response for each clip was used as an index of emotional encoding for that clip; the mean intensity of each clip was used as a measure of encoding intensity.

No significant encoding effects were found; in addition, many judges noted that subjects overall were not very expressive and that it was difficult in

many cases to choose which emotion was being encoded. Therefore, results of encoding analyses will not be discussed further.

Decoding Results

Decoding ability was analyzed only for those subjects who experienced the intended emotion. After excluding 27 subjects, including all subjects in the low disgust condition, 17 subjects remained for analysis.

To analyze decoding ability, subjects' judgments on each decoding segment for each emotion were combined into a single scale. Subjects' scores ranged from zero to four correct judgments on each scale. To assess misattributions of each emotion, the total number of times a subject decoded a specific emotion was determined. The number of times a subject correctly attributed this emotion to a decoding segment was subtracted from this total. For example, if a subject chose sadness nine times, and if three attributions of sadness were in response to sad facial expressions, that subject would receive a score of six misattributions of sadness.

Results show only a significant main effect of viewed emotion on misattributions of disgust ($F$ (1,14) = 5.523, $p$ = .03). As expected, subjects viewing a vignette containing disgust showed less misattributions of disgust ($M$ = 3.25) than did subjects who viewed a sad prime ($M$ = 4.22). No other significant differences due to the emotion or intensity of a vignette were found on any decoding scale (all $F$'s < 1).

Table 1

Experiment 1 Decoding Results

| Prime | Source | F-ratio | P-value |
|---|---|---|---|
| Sadness | Intensity | .49 | .495 |
| | Emotion | .33 | .574 |
| Happiness | Intensity | .05 | .826 |
| | Emotion | .167 | .689 |
| Anger | Intensity | .864 | .368 |
| | Emotion | 2.33 | .149 |
| Fear | Intensity | .004 | .948 |
| | Emotion | 1.19 | .292 |
| Disgust | Intensity | 2.946 | .108 |
| | Emotion | **5.523** | .03 |

To test other possible effects, subjects' decoding results were also analyzed by the emotion they reported experiencing while viewing the vignette, and by the type and intensity of the actual emotion presented in the vignette. However, these results showed few significant effects, and therefore they will not be discussed here (see Appendix D for these results).

## Discussion

Analysis of this study's methodology revealed several problems which may explain the lack of significant findings. Several of the filmed vignettes used in this study produced poor results. While the intensity manipulation was successful, over 60% of subjects were excluded from analysis after indicating an unintended emotional state. In particular, the weak disgust vignette was completely ineffective in producing the intended emotion; no subject in this group indicated feeling disgust.

Within the sadness conditions, the method by which the vignettes produced emotions was unexpected. While most subjects in the high disgust condition indicated that the emotion shown in the vignette was disgust, only one of eight subjects in either sad condition reported sadness as the emotion displayed. Instead, 75% of subjects chose fear. Since the situation in the sadness vignettes involved receiving unexpected bad news, subjects may have interpreted this situation as fear-evoking for the protagonist while still feeling sadness themselves.

This study used covert encoding measures to obtain as natural a sample of expressive behavior as possible. During debriefing, a substantial number of subjects indicated either that they knew or they suspected a camera was hidden within the stereo speaker. These subjects were excluded from analysis. However, the possibility remains that other subjects may have had similar knowledge or suspicion and did not mention it during debriefing. This knowledge would certainly bias subjects' encoding ability. In addition, knowledge or suspicion of a camera could decrease subjects' attention, thus decreasing the effectiveness of the vignette.

Finally, the experimenters may have compromised subjects' attention. Vignettes, encoding segments, and decoding segments were placed on separate videotapes. Several times during the experiment, the experimenter had to change tapes. While a tape was running, the experimenter left the room to minimize distractions, since the presence of another person might inhibit subjects' responses. During debriefing, several subjects remarked that the switching of tapes and leaving and re-entering the room was distracting. These distraction may have caused subjects to be less attentive to the tasks.

# CHAPTER 3

## EXPERIMENT 2

Since emotional encoding produced no effects in Experiment 1, and since the presence of a "hidden" video camera may have distracted subjects, in Experiment 2 only emotional decoding was examined. Because of the ineffectiveness of the vignettes used in Experiment 1, a new set of emotion induction segments were used. These consisted of short (five minute) segments from popular movies. All segments were pretested and found to reliably induce a specific emotion.

Given the difficulty of equating film clips containing different levels of the same emotion, only one level of intensity was used in this study. In order to extend generalizability, instead of examining only two emotions, fear and anger were also used for a total of four. All relevant material for each condition was placed on a single tape to avoid disruptions caused by experimenters entering and exiting the room.

As in the first study, it was predicted that viewing an emotion inducing clip would bias subsequent decoding ability.

## Method

### Subjects

Fifty-seven subjects were recruited from several undergraduate psychology courses and were offered experimental credit for their participation. Subjects were randomly assigned to one of four emotional prime conditions: sadness, anger, fear, or disgust. To minimize demand characteristics, subjects were told the study dealt with actors' abilities to transmit information.

### Setting

The setting for this study was identical to that in Experiment 1; however, since emotional encoding was excluded from this study, the electronic equipment used to disguise the video camera, as well as the camera itself, was removed.

### Procedure

Upon entering the lab, subjects were told they would view a series of film segments and would answer questions about the segments afterward. After answering subjects' questions about the study, they were instructed to "attentively view each clip." The experimenter left after starting the videotape.

First, subjects watched a five-minute film segment designed to elicit a specific emotional response. The segments were taken from several popular movies. The films used in each condition were: Jaws (fear), Terms of Endearment (sadness), Breaking Away (anger), and Creepshow (disgust). All segments were pretested and found to reliably induce a specific emotion.

After viewing the segment, subjects rated it on such features as its quality, clarity and presentation. Two manipulation check questions were included in these measures. Subjects chose the emotion the clip elicited from a choice of five alternatives (happiness, sadness, anger, fear/surprise, and disgust). Subjects also rated the strength of their emotional response on a seven-point Likert scale, with one being "not at all intense" and seven being "very intense."

Decoding ability was assessed using the same procedure and film segments as in Experiment 1. After subjects rated all decoding segments, they were probed for suspicion, debriefed, and dismissed.

## Results

### Manipulation Check

Subjects' ratings of each segment's intensity did not differ significantly according to the emotion being induced ($F$ (3,53) = 1.51, $p$ = .22). Ratings in the fear, anger, sadness, and disgust conditions were 3.87, 4.0, 4.71, and 4.93 respectively.

### Decoding results

Decoding ability was analyzed only for subjects who experienced the intended emotion. After excluding 17 subjects who indicated that the priming segment elicited an emotion other than the expected one, 40 subjects remained for analysis.

Decoding ability was analyzed using the same procedure as Experiment 1. In addition, planned contrasts were computed for each emotion condition. Contrasts compared the number of misattributions of each group in decoding the specific emotion they were expected to feel against the number of misattributions of that emotion made by the combination of the other three groups. For example, when analyzing misattributions of sadness, contrasts compared the group which saw the sad film against the combination of the other three groups.

Oneway analyses of variance showed no significant differences in decoding accuracy by group (all $F$'s $<1$). Subjects' accuracy was expected to improve when decoding a facial expression congruent with an induced emotion. However, it is possible that the small number of decoding attempts of each emotion (4) restricted any significant effects.

Table 2

Experiment 2 Contrast Results

| Prime Type | Contrast Means & SDs S | A | F | D | t-value | P-value |
|---|---|---|---|---|---|---|
| Sadness | **1.81** | 4.00 | 2.33 | 2.60 | -1.81 | .078 |
| SD | 1.04 | 2.82 | 2.35 | 1.58 | | |
| Anger | 1.13 | **0.00** | 1.50 | 1.20 | -2.05 | .047 |
| SD | .96 | 0.00 | .904 | .632 | | |
| Fear | 1.50 | 3.00 | **0.58** | 1.60 | -3.01 | .005 |
| SD | 1.41 | 1.41 | .90 | 1.17 | | |
| Disgust | 2.19 | 3.50 | 1.75 | **1.60** | -1.35 | .187 |
| SD | 1.76 | 2.12 | 1.29 | 1.50 | | |

Analysis of planned contrasts of misattributions of emotion shows in both anger ($t(36) = 2.05$, $p < .04$) and fear ($t(36) = 3.01$, $p < .005$) conditions, subjects showed significant bias in their decoding accuracy. As expected, subjects seeing a fear-inducing movie were significantly less likely to mislabel a non-fear decoding clips as showing fear; this pattern of results was duplicated in the anger condition. A trend in the same direction occurred in the sadness condition ($t(36) = 1.81$, $p < .07$). While the disgust condition did not significantly show this effect ($t(36) = 1.35$, $p < .18$), the pattern of results in this condition was identical to each of the other conditions. The lack of significant results in the disgust condition could be due to the film segment used to induce emotion; several subjects noted this segment contained a mixture of both disgust and fear. The combination of these two emotions may have attenuated the effect of disgust, leading o nonsignificant results.

As in Experiment 1, subjects' decoding results were also analyzed according to the emotion subjects reported experiencing and according to the actual emotion presented in the film segment. However, these results provided little in the way of systematic patterns and will not be discussed (see Appendix E for these results).

# CHAPTER 4

## GENERAL DISCUSSION

The induction of an emotion was expected to lead to subsequent bias in emotional judgments. Although results were not as strong as expected, the results of experiment 2 support this idea. Overall, subjects within an emotion condition made significantly less misattributions of the induced emotion than did other subjects. This effect reached statistical significance in two of four groups and was marginally significant in a third group. The use of only four decoding stimuli for each emotion may have led to nonsignificant results when examining correct emotion attributions.

This pattern of results also occurred in Experiment 1, although the effect was nonsignificant. In Experiment 1, subjects' misattributions of disgust decreased as the intensity of disgust primes increased ($\underline{M}$ = 4.27 for low disgust, $\underline{M}$ = 3.73 for high disgust). While no comparable pattern was found for sadness primes in Experiment 1, it should be recalled that sadness manipulations were largely ineffective, producing instead feelings of fear. When looking at misattributions of fear, subjects made less misattributions in the strong sadness condition ($\underline{M}$ = 4.42) than in a weak sadness condition ($\underline{M}$ = 4.10). While these results must be interpreted cautiously, both studies show evidence that inducing an emotion led to decreased misattributions of that emotion.

While these experiments hypothesized increased decoding ability as the result of emotion induction, it could also be argued that emotion induction might lead to decreased ability on that emotion. It seems possible that activation of an emotion could cause a decrement in ability to distinguish emotions as the activated category becomes stronger and more salient than other emotions. Why, then, did the induction of an emotion lead to increased accuracy?

One possible explanation concerns the strength of the emotion manipulation. Results of the manipulation check in both experiments show that only moderate amounts of emotion were induced. Associative network theories predict that the more activated an emotion becomes, the greater its influence should be. It is possible that subjects' moderate emotional responses to these films may in part explain the limited nature of these results.

The majority of emotion manipulations produce very strong effects (Forgas & Bower, 1987; Bower, 1981). In such a case, mood-congruent misattributions would be expected. In contrast, results of these experiments show that only moderate intensity emotion induction occurred. Fiske and Taylor (1991) have pointed out that moderate intensity primes tend to increase the amount of overlap and thus increase assimilation or, in this case, accuracy. As a result, an emotion may still have been induced, but not to the point where it overwhelmed all other emotions. Such a pattern of activation would account for the results of these experiments.

Both Fiske and Taylor (1991) and Berkowitz (in press) have suggested that blatant priming manipulations are likely to cause contrast effects, as subjects overcompensate for obvious manipulations. Since no subject indicated suspicion about the cover story used in these experiments, it seems likely that they did not intentionally overcompensate, thus decreasing their inaccuracy.

While the results of this experiment may be used as the foundation for future research, certain methodological problems need to be eliminated. First, it is possible that both the initial film segment as well as the decoding stimuli may have caused emotional arousal. If so, subjects' decoding ability should progressively deteriorate as they view more and more expressions.

To test this possibility, decoding results from both experiments were analyzed according to their order of presentation. Specifically, segments were divided into sets of four (e.g segments one to four were analyzed as a group, segments five to eight, etc.). Results showed no decrement in performance over time in either experiment (all $F$'s $< 1$). Despite the apparent lack of emotional arousal from the decoding segments, future experiments should account for such a possibility. A possible solution would be to counterbalance the order of presentation of decoding segments to eliminate order effects.

Also, the method used to induce emotion was problematic. It was assumed that having subjects view a short, emotionally-laden film segment would induce the corresponding emotion, which would then bias subsequent

encoding and decoding. However, in both studies, fairly large numbers of subjects (61.4% in Experiment 1 and 26.8% in Experiment 2) were excluded from analysis after indicating they felt an unexpected emotion after viewing the emotion-inducing clip.

Within the film segments used in these experiments, it is possible that several different emotional events may have occurred. These conflicting emotions could confound the induction process, leading to weak emotional states or the induction of unexpected emotions. While prior studies have used similar methods to induce emotion (Gurtman et al., 1990; Tamborini, Stiff, & Heidel, 1990; Forgas & Moylan, 1987; Zillmann & Cantor, 1977), such studies have generally employed clips of relatively long duration (30 - 55 minutes). Longer films would likely produce a stronger emotional reaction.

This research has demonstrated the effect of emotion induction on subsequent emotion-related judgments. Results, while not as strong as expected, have shown a somewhat consistent pattern of bias over several distinct emotional states. Although more theoretical and empirical work is needed before definite conclusions can be drawn, these experiments have laid the groundwork for future research.

## APPENDIX A

## TRANSCRIPTS OF DISGUST-EVOKING SEGMENTS

Both disgust-evoking segments begin similarly:

(Student in office working. Picks up phone and dials)

"Dad! Hi, it's me. How are you?"

"Not much. What are you doing?"

"Me too. I'm in my office right now. I brought supper in with me cause I had a lot of work to do."

"I'm not a workaholic! I just have a lot to do."

"Uh-huh. Hey, I talked to John the other day." "Yeah, the job in California is going great. He said he'll write to you as soon as he gets the chance."

(Reaches into plastic bag and removes Tupperware container)

"The noise you're hearing is me unpacking my supper. I had some leftover Chinese food that I brought with me."

"I wish you were here too. I know how much you like that."

(Looks into container)

Low disgust segment

(Grimace)

"Oh. This food doesn't look so good. I think there might be something wrong with it. I think I'll grab something else later."

"I'll talk to you soon. I gotta go."

"Love you too. Bye."

(Hangs up phone)

High disgust segment

(Look of disgust)

"Oh my God, there are maggots in my food."

(Puts hand to mouth)

"They're moving!"

(Throws container into trash can)

"Dad, I gotta go. I Think I'm going to be sick. I'll talk to you later."

(Begins to cough and gag)

## APPENDIX B

## TRANSCRIPTS OF SADNESS-EVOKING SEGMENTS

Both sadness-evoking segments begin similarly:

(Student in office working. Picks up phone and dials)

"Dad! Hi, it's me. How are you?"

"Not much. What are you doing?"

"Me too. I'm in my office right now. I brought supper in with me cause I had a lot of work to do."

"I'm not a workaholic! I just have a lot to do."

"Uh-huh. Hey, I talked to John the other day." "Yeah, the job in California is going great. He said he'll write to you as soon as he gets the chance."

(Reaches into plastic bag and removes Tupperware container)

"The noise you're hearing is me unpacking my supper. I had some leftover Chinese food that I brought with me."

"I wish you were here too. I know how much you like that."

(Looks into container)

Low sadness segment

(Pause as father talks)

"Dad, what's wrong?"

"What?"

"Uncle Joe's dog?"

"Well, what are they going to do?"

"What did the doctor's say?"

"Uh-huh."

"Yeah, I understand. Keep me informed. I'll talk to you later. Bye."

(Hangs up phone)

High sadness segment

(Pause as father talks)

"What?"

"Mom?"

"Well, what are you going to do?"

"What did the doctors say?"

"Uh-huh."

(Begins to cry).

"Yeah, I understand. I'll talk to you later. Bye."

(Hangs up phone. Puts head on desk and begins to cry)

## APPENDIX C

## EXPERIMENT 1 MANIPULATION CHECK

1. How clear was the video portion of the clip?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Not at all clear | | | | | | Very clear |

2. How clear was the audio portion of the clip?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Not at all clear | | | | | | Very clear |

3. Circle the label which best describes how the woman in the clip felt:

anger disgust fear/surprise happiness sadness

4. How intense was this feeling?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Not at all intense | | | | | | Very intense |

5. How understandable was the actors' dialogue?

1 2 3 4 5 6 7

Not at all Very much

6. Circle the label which best describes how the clip made you feel:

anger disgust fear/surprise happiness sadness

7. How intense was this feeling?

1 2 3 4 5 6 7

Not at all Very intense

8. How "professional" did this clip look?

1 2 3 4 5 6 7

Not at all Very much

## APPENDIX D

## ANALYSES OF DECODING SCORES - EXPERIMENT 1

All subjects' data were analyzed according to the type and intensity of the actual emotion presented in the filmed vignette, as well as according to the emotion subjects experienced while viewing the vignette. Analysis of decoding according to subject's experience of emotion revealed no significant effects (all $F$'s $<1$); these results will not be discussed further.

Decoding scales were analyzed via two-way between subjects analysis of variance according to expected emotion (sadness vs. disgust) and film intensity (strong vs. weak).

On the measure of fear misattributions, results showed a highly significant main effect for expected emotion ($F$ (1,40) = 8.60, $p$ = .006). Subjects viewing a sad film made significantly more fear misattributions ($M$ = 4.27) than did subjects viewing a disgusting film ($M$ = 3.18). Given that a sizable number of subjects in both sadness conditions (nine of 19 subjects) indicated that they felt fear after viewing a sad film, it is possible that fear, instead of sadness, was actually induced by these clips.

On the measure of anger misattributions, results also showed a marginally significant main effect for primed emotion ($F$ (1,40) = 3.75, $p$ = .06). Subjects who viewed a sad priming clip made slightly fewer misattributions of anger ($M$ = 2.09) than did subjects who viewed a disgust clip ($M$ = 2.95). This

effect, however, was qualified by a significant interaction between primed emotion and intensity of prime ($F$ (1,40) = 4.55, $p$ = .04). While subjects' misattributions of anger decreased as the intensity of sad primes increased ($M$ = 2.50 in the low sadness condition, $M$ = 1.60 in the high sadness condition), anger misattributions increased as the strength of disgust primes increased ($M$ = 2.45 in the low disgust condition, $M$ = 3.45 in the high disgust condition). These results were not predicted by the hypotheses. Since subjects were not induced to feel angry and no subject listed anger as the emotion present in the priming clips or as the emotion elicited by the vignette, there seems to be no logical reason why this effect would occur.

## APPENDIX E

## ANALYSES OF DECODING SCORES - EXPERIMENT 2

Similar to Experiment 1, analyses of variance of decoding according to subjects' indicated emotion yielded no significant effects (all $F$'s < 1); these results will not be discussed further.

Analysis of decoding ability according to intended emotion revealed no significant effects (all $F$'s n.s.). However, planned contrasts revealed a significant contrast within the fear scale ($t$ (55) = 2.50, $p$ = .01). Subjects in the fear condition made significantly less misattributions of fear ($M$ = 0.6) than subjects in other conditions ($M$ = 1.48).

It should be noted that the mean number of misattributions of fear in this experiment is markedly lower than those in experiment 1. Given the problematic nature of the primes in experiment 1, the results of this study are likely more accurate.

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